

09/177,003 8/6/04

-20-

What is claimed is:

Peter Michaelson, 30,

(732) 664/

3 com - 28

1 1. In a receiver that receives a modulated signal having  
2 multiple levels and having an equalizer with plural  
3 equalization settings for compensating for distortion in  
4 the received signal, a method of selecting one of the  
5 plural equalization settings that provides an optimum  
6 compensation for the distortion, comprising:

7 (A) for each one of the equalizer settings:

8 setting the equalizer to the one setting;

9 defining valid regions encompassing each of the  
10 multiple levels of said modulated signal and invalid  
11 regions not encompassing the multiple levels;

12 computing a first metric comprising a count of  
13 samples within said invalid regions;

14 computing a second metric comprising  
15 differences less than a predetermined threshold between  
16 pairs of samples falling within the same valid region;

17 combining the first and second metrics to  
18 produced a combined metric for said one setting;

19 (B) choosing the equalizer setting corresponding to  
20 the best combined metric.

1 2. The method of Claim 1 wherein said invalid regions  
2 lie generally between the valid regions.

1 3. The method of Claim 1 wherein each valid region  
2 includes a range of amplitudes within a predetermined  
3 fraction of the amplitudes of the corresponding multiple  
4 level.

1 4. The method of Claim 1 wherein each invalid region  
2 includes a range of amplitudes deviating by more than a  
3 predetermined fraction of a peak amplitude from the  
4 corresponding multiple level.

1 5. The method of Claim 3 wherein the predetermined  
2 threshold corresponds to a fraction less than the  
3 predetermined fraction.

1 6. The method of Claim 5 wherein the predetermined  
2 fraction corresponds to 10% and the predetermined  
3 threshold corresponds to 5%.

1 7. The method of Claim 1 wherein each of the pairs of  
2 samples falling within the valid region comprise two  
3 samples occurring successively.

1 8. The method of Claim 7 wherein a sample intervening  
2 chronologically between the two successive samples but  
3 not falling within the same valid region is ignored for  
4 purposes of determining successive samples.

1 9. The method of Claim 1 wherein the first metric is a  
2 measure of the deviation of samples from valid signal  
3 levels of the multistate signal and the second metric is  
4 a measure of the consistency of samples about each valid  
5 signal level.

1 10. The method of Claim 1 wherein the combined metric is  
2 a difference between said first and second metrics.

1 11. The method of Claim 10 wherein the best combined  
2 metric is the least positive or most negative metric.

1 12. The method of Claim 1 wherein the combined metric is  
2 a ratio between said first and second metrics.

1 13. The method of Claim 1 wherein each equalizer setting  
2 corresponds to a different transfer function of the  
3 equalizer, *as to def a plm. if for further*

1 14. The method of Claim 1 wherein each transfer function *is the*  
2 corresponds to a unique set of poles and zeroes *if the*  
3 corresponding to a particular reactance. *fun*

1 15. The method of Claim 1 wherein the step of computing  
2 the second metric is carried out for sample pairs in each  
3 of the valid regions, the number of differences not  
4 exceeding the threshold being summed across all valid  
5 regions.

1 16. A receiver that receives a modulated signal having  
2 multiple levels, said receiver comprising:

3 an equalizer with plural equalization settings for  
4 compensating for distortion in the received signal; and

5 an adapter for selecting one of the plural  
6 equalization settings that provides an optimum  
7 compensation for the distortion at the output of the  
8 equalizer, said adapter comprising:

9 means for setting the equalizer to the one  
10 setting;

11 means for defining valid regions encompassing  
12 each of the multiple levels of said modulated signal and  
13 invalid regions not encompassing the multiple levels;

14 means for computing a first metric comprising a  
15 count of samples within said invalid regions;

16 means for computing a second metric comprising  
17 differences less than a predetermined threshold between  
18 pairs of samples falling within the same valid region;

19 means for combining the first and second  
20 metrics to produced a combined metric for said one  
21 setting and choosing the equalizer setting corresponding  
22 to the best combined metric.

1 17. The receiver of Claim 16 wherein said invalid  
2 regions lie generally between the valid regions.

1 18. The receiver of Claim 16 wherein each valid region  
2 includes a range of amplitudes within a predetermined  
3 fraction of the amplitudes of the corresponding multiple  
4 level.

1 19. The receiver of Claim 16 wherein each invalid region  
2 includes a range of amplitudes deviating by more than a  
3 predetermined fraction of a peak amplitude from the  
4 corresponding multiple level.

1 20. The receiver of Claim 18 wherein the predetermined  
2 threshold corresponds to a fraction less than the  
3 predetermined fraction.

1 21. The receiver of Claim 20 wherein the predetermined  
2 fraction corresponds to 10% and the predetermined  
3 threshold corresponds to 5%.

1 22. The receiver of Claim 16 wherein each of the pairs  
2 of samples falling within the valid region comprise two  
3 samples occurring successively.

1 23. The receiver of Claim 22 wherein a sample  
2 intervening chronologically between the two successive  
3 samples but not falling within the same valid region is  
4 ignored for purposes of determining successive samples.

1 24. The receiver of Claim 16 wherein the first metric is  
2 a measure of the deviation of samples from valid signal  
3 levels of the multistate signal and the second metric is  
4 a measure of the consistency of samples about each valid  
5 signal level.

1 25. The receiver of Claim 16 wherein the combined metric  
2 is a difference between said first and second metrics.

1 26. The receiver of Claim 25 wherein the best combined  
2 metric is the least positive or most negative metric.

1 27. The receiver of Claim 16 wherein the combined metric  
2 is a ratio between said first and second metrics.

